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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,722

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Koichi Imamura

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7590

10/23/2009

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EXAMINER

USELDING, JOHN E

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

10/23/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,722	<b>Applicant(s)</b> IMAMURA ET AL.	
	<b>Examiner</b> /JOHN USELDING/	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-11 and 13-15 is/are pending in the application.
- 4a) Of the above claim(s) 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7-11 and 13-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/8/2009</u> .                                               | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/6/2009 has been entered.

### ***Election/Restrictions***

This application contains claim 6 which is withdrawn being drawn to an invention nonelected with traverse in the reply filed on 9/22/2008.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-5, 7-8, and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (EP 1142954) as evidenced by Hughes (3,575,852).

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Regarding claims 1 and 5: Suzuki et al. teach a process for the production of a resin composition comprising 100 parts by weight of a polycarbonate that is preferably aromatic (28, 63) and 0.1 to 50 parts by weight of a silicate filler (63). Suzuki et al. teach that the silicate filler is prepared by introducing an organosilicon compound containing a hydrolysable group or hydroxyl group bonded to a silicon atom having the formula  $Y_nSiX_{4-n}$  (46) in a lamellar silicate such as montmorillonite (47-51, 206, 210). Hughes is being used as an evidentiary reference to show that montmorillonite intrinsically has a cation exchange capacity within the claimed range. Hughes teaches that montmorillonite has a cation exchange capacity between 80 and 150 milliequivalents/100g (column 3, lines 53-63). Suzuki et al. teach that, in the method of making the resin composition, the method of polymerization is not specifically limited (120). They teach that the polycarbonate resin can be made by interfacial polycondensation (30) and that interfacial polycondensation can be used in making the resin compositions when other types of polymers are used (123, Tables 2-2 and 2-3). Suzuki et al. teach polymerization of the polycarbonate in the presence of the phyllosilicate (120-122). Suzuki et al. fail to teach specifically using interfacial polycondensation to make the resin composition with the phyllosilicate when an aromatic polycarbonate is used as the resin. Since Suzuki et al. are open to any method it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used interfacial polycondensation to make the resin composition using aromatic polycarbonate because Suzuki et al. have taught the method can be used to make the prepolymer and the resin composition when other

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polymers are used. Suzuki et al. does not require the presence of an amine compound, a quaternary ammonium salt compound, or a quaternary phosphonium salt compound as a polymerization catalyst in their production method. The description of the polymer precursor formation constitutes product-by-process language in the context of an overall process claim. Process limitations in such claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. "In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985). Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433. See also *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Suzuki et al. teach that their polymer precursor is made from polyhydric phenols and carbonic acid esters (28). They teach using a carbonate precursor (30). It would have been obvious to select bisphenol A as the polyhydric phenol since Suzuki et al. teach that it is the most typical one used (29, 141). It would have been obvious to select phosgene as the carbonate precursor because Suzuki et al. teach that it is most commonly used since it is easy to obtain (30).

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Suzuki et al. teach that the reaction occurs in the presence of organic solvent and alkali water (30). Alkali water acts as both the acid binder and the water component of the mixture.

Regarding claim 3: The description of the silicate filler formation constitutes product-by-process language in the context of an overall process claim. Process limitations in such claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. "In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985). Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433. See also *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Suzuki et al. teach that their silicate is made by dispersing the silicate (component B-2) in a polar solvent and then adding the organo-silane compound (component B-1) (46-49, 94-95, 100).

Regarding claim 4: Suzuki et al. teach that the size of the montmorillonite is on the order of 1  $\mu\text{m}$  (67, 288), which is within the claimed range.

Regarding claim 7: Suzuki et al. teach using particularly preferably 0.5 to 55% by weight of the organo-silane compound (organic content) in the silicate (component B) (106).

Regarding claim 8: Suzuki et al. teach that a mixture of component B with a polar solvent is added to the polymer precursor for polymerization (110-112).

Regarding claim 14: Suzuki et al. teach a resin composition produced by their process (92).

Regarding claim 15: Since Suzuki et al. teach that same process for claim 1 then either the composition of Suzuki et al. intrinsically meets this limitation or the applicant has failed to claim a critical feature of their process that is necessary to meet this limitation.

Claims 9, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (EP 1142954) as evidenced by Hughes (3,575,852) as applied to claim 1 above further in view of Kricheldorf (Handbook of Polymer Synthesis).

Regarding claim 9: Suzuki et al. and Hughes teach what is listed above. Suzuki et al. fails to teach that the interfacial polycondensation is carried out in an emulsified state. However, Kricheldorf teaches that it is known in the art to perform interfacial polycondensation in an emulsified state (p. 829, paragraph 2) and that interfacial polycondensation may be carried out in a static system (p. 829, paragraph 1). Since Suzuki et al. teach that the method of polymerization is not specifically limited (120) it would have been obvious to one of ordinary skill in the art at the time the invention was

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made to have performed the interfacial polycondensation in an emulsified state in a static system that does not substantially cause a shear force.

Regarding claim 10: (I) Suzuki et al. teach that their polymer precursor is made from polyhydric phenols and carbonic acid esters (28). They teach using a carbonate precursor (30). It would have been obvious to select bisphenol A as the polyhydric phenol since Suzuki et al. teach that it is the most typical one used (29, 141). It would have been obvious to select phosgene as the carbonate precursor because Suzuki et al. teach that it is most commonly used since it is easy to obtain (30). Suzuki et al. teach that the reaction occurs in the presence of organic solvent and alkali water (30). Alkali water acts as both the acid binder and the water component of the mixture. (II) Suzuki et al. teach adding a mixture of component B with a polar solvent (46-49, 94-95, 100). (III) Suzuki et al. teach that the method for mixing the polymerizable prepolymer and the clay dispersion (component B) is not specifically limited (117). Any sort of mixing is going to provide a shear force. This is evidenced by the fact that the applicant has described stirring as a shear force action (24). If one of ordinary skill was going to perform the interfacial polycondensation in an emulsified state as described with reference to claim 9 it would have been obvious to have applied shear force to the mixture at this point to create an emulsion. Suzuki et al. do not discuss any shear force that is occurring when they discuss interfacial polymerization (123). It is known in the art that interfacial polymerization can occur in a static system or a stirred mixture. This is evidenced by Kricheldorf (page 829, first paragraph). Since Suzuki et al. is open to



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any process it would have been obvious to one of ordinary skill in the art to have chosen to conduct the polymerization in a static system.

(IV) Suzuki et al. teach obtaining a resin composition in a solid state (136-138). They teach that when interfacial polymerization is used the water dispersion is removed after the completion of the polymerization (110).

Regarding claim 13: Suzuki et al. teach washing their isolated residue with water and then drying to obtain a solid state (216, 227).

Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (EP 1142954), Hughes (3,575,852), and Kricheldorf (Handbook of Polymer Synthesis) as applied to claim 10 above further in view of Mitsunaga et al. (WO 2003/010235). US2004/0030021 is being used as an English language equivalent of WO 2003/010235 since it is a national stage entry of the international application.

Regarding claim 11: Suzuki et al. teach what is listed above. Suzuki et al. fail to teach the step of adding a monohydric phenol. However, Mitsunaga et al. teach that a terminal capping agent is generally used in interfacial polycondensation polymerization to make aromatic polycarbonates to which silicates will be added (47). Mitsunaga et al. teach that this capping agent can be p-tert-butylphenol (47 and 258). Suzuki et al. and Mitsunaga et al. are analogous art because they are both concerned with the same field of endeavor, namely the production of aromatic polycarbonate compositions containing silica using interfacial polycondensation. At the time of the invention a person having ordinary skill in the art would have found it obvious to have combined the p-tert-

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butylphenol terminal stopper of Mitsunaga et al. with the process of Suzuki et al. and would have been motivated to do so because it would stop the polymerization in the preparation of the polymer precursor.

### ***Response to Arguments***

Applicant's arguments filed 3/9/2009 have been fully considered but they are not persuasive.

The Applicant has argued that Suzuki et al. do not disclose the absence of an amine compound, a quaternary ammonium salt compound, or a quaternary phosphonium salt compound as a polymerization catalyst in their production method. There is nothing in the teaching that requires the presence of those types of compounds. The prior art is not required to specifically teach the exclusion of compounds to be applicable to negative limitations. The mere absence of the compounds or the absence of the necessity of the compounds is sufficient to be applicable prior art.

The Applicant has stated that Suzuki et al. fails to recognize the importance of the aqueous phase. Suzuki does not teach the polymerization catalysts that the Applicant is excluding and therefore does not have the negative effect to the aqueous phase that the Applicant is asserting. Suzuki specifically teaches that the polycondensation reaction occurs and the interface between the organic solvent and the water (0030) and therefore recognizes the importance of the aqueous phase.

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The Applicant has argued that Suzuki does not teach or suggest interfacial polycondensation when an aromatic polycarbonate is used. This is not what the Office had stated in the previous office action. Instead it was stated that Suzuki et al. teach that the polycarbonate resin can be made by interfacial polycondensation (30). However, Suzuki et al. fail to teach *specifically* using interfacial polycondensation to make the resin composition *with the phyllosilicate* when an aromatic polycarbonate is used as the resin. Therefore Suzuki does teach interfacial polycondensation when an aromatic polycarbonate is used (0030) and suggest (but not specifically teach) using interfacial polycondensation to make the resin composition *with the phyllosilicate*.

The Applicant has asserted that transesterification is the preferred method of Suzuki and, therefore, one would not use interfacial polycondensation. This is not persuasive because patents are relevant prior art for all that they contain and not just the preferred embodiments. "The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain." *In re Heck*, 699 F.2d 1331, 1332-33, 216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting *In re Lemelson*, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)). See MPEP 2123. "Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments." *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred

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embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989).

The Applicant has argued unexpected results. This is not persuasive for the following reasons:

1) The claims are not commensurate in scope with the data provided. The data is for a specific polycarbonate made from bisphenol A and phosgene and for a specific combination of silcate fillers, saponite and aminosilane.

2) The Applicant has not shown unexpected results over the closest prior art, which would be Suzuki as applied above made using the transesterification method.

3) The data provided is not sufficient to prove unexpected results. The comparative data is not similar enough to the examples to make a true comparison. The Applicant does not have a comparative example where all the components and methods are the same except a polymerization catalyst is used. The comparative examples either use a different component B, content of lamellar silicate, production method of resin, or polycondensation conditions.

The Applicant has argued that Hughes is only an evidentiary reference and is non-analogous art. Suzuki et al. teach a compound that meets the claimed cation exchange capacity values. Hughes is merely being used as an evidentiary reference to prove that the property is intrinsic to the compounds in Suzuki et al. It is irrelevant whether it is analogous art or not.

The Applicant has argued that Suzuki et al. fails to teach that the interfacial polycondensation is carried out in an emulsified state without substantially causing

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shear force. As shown above that method was known in the art. The Applicant has made a statement that it was widely thought that substantial shear force was need to disperse the silicate. No evidence was provided to support the assertion. See MPEP 2145.

The Applicant has argued that Mitsunaga et al. teaches away from the current invention because it teaches the use of the polymerization catalysts. It is noted that Applicant has not stated that Mitsunaga et al. teaches away from the combination of references but that they teach away from the invention. Only the terminal capping agent of Mitsunaga et al. in being incorporated into Suzuki et al. and not their polymerization method. In response to Applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to /JOHN USELDING/ whose telephone number is (571)270-5463. The examiner can normally be reached on Monday-Thursday 6:00am-4:30pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHN USELDING/  
Examiner  
Art Unit 1796

/Marc S. Zimmer/  
Primary Examiner, Art Unit 1796